NPTEL Video Course - Mathematics - NOC:Stochastic Processes - 1

Subject Co-ordinator - Dr. S. Dharmaraja

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable │ MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and motivation for studying stochastic processes
Lecture 2 - Probability space and conditional probability
Lecture 3 - Random variable and cumulative distributive function
Lecture 4 - Discrete Uniform Distribution, Binomial Distribution, Geometric Distribution, Continuous Uniform
Lecture 5 - Joint Distribution of Random Variables
Lecture 6 - Independent Random Variables, Covariance and Correlation Coefficient and Conditional Distribution
Lecture 7 - Conditional Expectation and Covariance Matrix
Lecture 8 - Generating Functions, Law of Large Numbers and Central Limit Theorem
Lecture 9 - Problems in Random variables and Distributions
Lecture 10 - Problems in Random variables and Distributions (Continued...)
Lecture 11 - Problems in Random variables and Distributions (Continued...)
Lecture 12 - Problems in Random variables and Distributions (Continued...)
Lecture 13 - Problems in Sequences of Random Variables
Lecture 14 - Problems in Sequences of Random Variables (Continued...)
Lecture 15 - Problems in Sequences of Random Variables (Continued...)
Lecture 16 - Problems in Sequences of Random Variables (Continued...)
Lecture 17 - Definition of Stochastic Processes, Parameter and State Spaces
Lecture 18 - Classification of Stochastic Processes
Lecture 19 - Examples of Classification of Stochastic Processes
Lecture 20 - Examples of Classification of Stochastic Processes (Continued...)
Lecture 21 - Bernoulli Process
Lecture 22 - Poisson Process
Lecture 23 - Poisson Process (Continued...)
Lecture 24 - Simple Random Walk and Population Processes
Lecture 25 - Introduction to Discrete time Markov Chain
Lecture 26 - Introduction to Discrete time Markov Chain (Continued...)
Lecture 27 - Examples of Discrete time Markov Chain
Lecture 28 - Examples of Discrete time Markov Chain (Continued...)
Lecture 29 - Introduction to Chapman-Kolmogorov equations

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Lecture 30 - State Transition Diagram and Examples
Lecture 31 - Examples
Lecture 32 - Introduction to Classification of States and Periodicity
Lecture 33 - Closed set of States and Irreducible Markov Chain
Lecture 34 - First Passage time and Mean Recurrence Time
Lecture 35 - Recurrent State and Transient State
Lecture 36 - Introduction and example of Classification of states
Lecture 37 - Example of Classification of states (Continued...)
Lecture 38 - Example of Classification of states (Continued...)
Lecture 39 - Example of Classification of states (Continued...)
Lecture 40 - Introduction and Limiting Distribution
Lecture 41 - Example of Limiting Distribution and Ergodicity
Lecture 42 - Stationary Distribution and Examples
Lecture 43 - Examples of Stationary Distributions
Lecture 44 - Time Reversible Markov Chain and Examples
Lecture 45 - Definition of Reducible Markov Chains and Types of Reducible Markov Chains
Lecture 46 - Stationary Distributions and Types of Reducible Markov chains
Lecture 47 - Type of Reducible Markov Chains (Continued...)
Lecture 48 - Gambler's Ruin Problem
Lecture 49 - Introduction to Continuous time Markov Chain
Lecture 50 - Waiting time Distribution
Lecture 51 - Chapman-Kolmogorov Equation
Lecture 52 - Infinitesimal Generator Matrix
Lecture 53 - Introduction and Example Of Continuous time Markov Chain
Lecture 54 - Limiting and Stationary Distributions
Lecture 55 - Time reversible CTMC and Birth Death Process
Lecture 56 - Steady State Distributions, Pure Birth Process and Pure Death Process
Lecture 57 - Introduction to Poisson Process
Lecture 58 - Definition of Poisson Process
Lecture 59 - Superposition and Deposition of Poisson Process
Lecture 60 - Compound Poisson Process and Examples
Lecture 61 - Introduction to Queueing Systems and Kendall Notations
Lecture 62 - M/M/1 Queueing Model
Lecture 63 - Little's Law, Distribution of Waiting Time and Response Time
Lecture 64 - Burke's Theorem and Simulation of M/M/1 queueing Model
Lecture 65 - M/M/c Queueing Model
Lecture 66 - M/M/1/N Queueing Model
Lecture 67 - M/M/c/K Model, M/M/c/c Loss System, M/M/? Self Service System
Lecture 68 - Transient Solution of Finite Birth Death Process and Finite Source Markovian Queueing Model
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Lecture 69 - Queueing Networks Characteristics and Types of Queueing Networks
Lecture 70 - Tandem Queueing Networks
Lecture 71 - Stationary Distribution and Open Queueing Network
Lecture 72 - Jackson's Theorem, Closed Queueing Networks, Gordon and Newell Results
Lecture 73 - Wireless Handoff Performance Model and System Description
Lecture 74 - Description of 3G Cellular Networks and Queueing Model
Lecture 75 - Simulation of Queueing Systems
Lecture 76 - Definition and Basic Components of Petri Net and Reachability Analysis
Lecture 77 - Arc Extensions in Petri Net, Stochastic Petri Nets and examples

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